Parent BMI increase 2 to 5 years post-study related to change in age but independent of other sociodemographics, health behavior, and study engagement

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Background

The Fuel for Fun (FFF) project is a theory-based multiple-component cluster randomized controlled study conducted among 4th graders and their families to promote positive food and activity environments, policies and behaviors at the individual, family, and school levels. The impact of FFF on students’ interest in cooking, fruit and vegetable preferences and activity levels have been evaluated, however, its impact on parent weight outcomes is yet to be investigated.1•2 Reduced metabolic rate because of aging and low physical activity is correlated to increased BMI.3•4 BMI is strongly associated with age, sex, physical activity and other physiological phases in life cycle.5

Objective

To assess parent weight change 2-5 y post participation in a controlled trial of a school and family intervention focused on culinary and physical activity experiences for 4th grade youth.

Methods

Study design: a longitudinal trial

Intervention: Youth in FFF cohorts 1 and 4 were controls (C) and cohorts 2 and 3 included the multiple-component intervention (I). Parents were enrolled in 1 of 4 treatments varying in type and intensity. Parents who had participated with their 4th grader in Fuel for Fun (FFF) were recruited via email to enroll in a follow-up (FFF-FU) assessment.

Data collection: FFF-FU survey set included measures from the original study and new items pertinent to parents of adolescents. FFF baseline and FFF-FU data were collected online using the Qualtrics platform. Parents completed surveys at baseline (BL), post-intervention, and 4 months post-study. FFF-FU data were collected spring 2018, 2 to 5 years post-BL.

The data collection tools included:
• Self-reported height and weight at BL and FFF-FU.
• Self-reported socio-demographic factors including ethnicity, gender, education and age at BL and FFF-FU. Perimenopausal was defined as including age 47 or higher13 at either BL or FFF-FU.
• Low income was defined as using an income-based program or worry about money for food.
• Parent Perceived Stress was assessed using the Visual analog scale 0 (no stress) to 10 (extreme stress).13
• The validated International Physical Activity Questionnaire (IPAQ) 8-item questionnaire was used to help parents recall physical activity 7 days prior to the survey. All physical activities conducted at home, work, leisure and sports were reported.1•2

Analysis

• Data were analyzed with SPSS version 25 (2017). BMI was calculated with self-reported height and weight BMI was categorized as underweight, normal, overweight or obese according WHO guidelines.4,5
• Demographic data were examined using descriptive statistics. The IPAQ data were divided into low, moderate or high activity levels.
• Data were analyze using General Linear Model for repeated measures, controlling for BL or FFF-FU sociodemographics, and health behaviors. Chi-square was used to assess the differences in BMI classes.

Background characteristics and baseline BMI

Of the 418 FFF parents, 127 completed FFF-FU surveys (mean age 42.5 ± 6.0 y) with 115 providing weight and height. FFF-FU sample was female (88%), white (84%), active (44% high activity), educated (69% college degree or higher), but had lower BMI (p = 0.039) and fewer with low income (p = 0.015) than FFF parents.

• Mean age at FFF-FU was 42.7 ± 5.9 NAJ years.
• More women were in perimenopausal age at FFF-FU (n = 32, 25%) compared to 7 (5.5%) at baseline.
• Intervention (n = 18, 15%) and control (n = 7, 6%) did not differ in the number of women at perimenopausal age.

Overall Change in BMI

• Of FFF-FU providing heights/ weights at the 3 assessments, mean (SE) BMIs were 24.2 (0.5), 24.4 (0.5), 24.6 (0.6) and 25.7 (0.6) respectively.
• Overall, change in BMI was significant after controlling for age, stress, ethnicity, sex, physical activity level, parent treatment and engagement (all p < 0.05), but not when BL to FFF-FU change in age (p = 0.079) was controlled.

Results

BMI category was stable from Baseline to FFF-FU for 77% of parents.

Table 1. Change in Parent BMI class from Baseline to FFF-FU

<table>
<thead>
<tr>
<th>BMI Category</th>
<th>Baseline (n=418)</th>
<th>FFF-FU (n=115)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>21 (5)</td>
<td>24 (22)</td>
</tr>
<tr>
<td>Normal</td>
<td>164 (39)</td>
<td>161 (41)</td>
</tr>
<tr>
<td>Overweight</td>
<td>23 (5)</td>
<td>28 (24)</td>
</tr>
<tr>
<td>Obese</td>
<td>60 (14)</td>
<td>52 (45)</td>
</tr>
</tbody>
</table>

20% of parents with children in the intervention group moved away from normal BMI class compared to 15% of parents with children in the control group.

Table 2. Change in Parent BMI class from Baseline to FFF-FU between Intervention Groups

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Baseline (n=253)</th>
<th>FFF-FU (n=60)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>15 (6)</td>
<td>16 (27)</td>
</tr>
<tr>
<td>Normal</td>
<td>155 (61)</td>
<td>157 (53)</td>
</tr>
<tr>
<td>Overweight</td>
<td>17 (7)</td>
<td>22 (37)</td>
</tr>
<tr>
<td>Obese</td>
<td>50 (20)</td>
<td>43 (70)</td>
</tr>
</tbody>
</table>

Association Between Perimenopausal Status and Change in BMI for Female Parents

The significantly greater increase in BMI for parents of intervention youth than controls persisted when controlling for socio-demographic and health behavior findings, but not when BL to FFF-FU perimenopausal age (p = 0.649) was controlled for female parents.

Conclusion

Significant weight gain by parents of youth in a nutrition intervention 2 to 5 years post-study was unrelated to stress, ethnicity, activity level, income, but was related to the age change from baseline and perimenopausal age.

References

8. Best Practice & Research Clinical Obstetrics and Gynecology
10. Contact: baalhst@rit.edu